

COLONY OF MAURITIUS

ANNUAL REPORT

ON THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR 1923



PORT LOUIS

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FOR THE YEAR 1923.

No. 942/24.

HONOURABLE COLONIAL SECRETARY,

I have the honour to submit the report on the work of the Department of Agriculture and on Agricultural conditions in the Colony for the year 1923.

PART I

AGRICULTURAL CONDITIONS IN 1923

The weather conditions experienced during the growing and harvesting seasons are summarised in the annexed tabular statement:

<i>Month and Year</i>	<i>Temperature</i>	<i>Rainfall</i>
1922		
November ...	Below Normal ...	... Considerably below Normal
December ...	Normal ...	... Considerably below Normal
1923		
January ...	Normal ...	... Considerably below Normal
February ...	Below Normal ...	... Markedly below Normal
March ...	Normal ...	... Generally below Normal
April ...	Above Normal ...	... Markedly above Normal
May ...	Above Normal ...	... Considerably above Normal
June ...	Normal ...	... Somewhat below Normal
July ...	Above Normal ...	... Markedly below Normal
August ...	Normal ...	... Normal
September ...	Below Normal ...	... Normal
October ...	Normal ...	... Normal
November ...	Above Normal ...	... Markedly below Normal
December ...	Above Normal ...	... Generally above Normal

Weather conditions were thus exceptionally unfavourable during the growing season. Had it not been for the unusually and unexpectedly favourable weather experienced in April and May the harvested crop would have been probably one of the lowest on record.

SUGAR INDUSTRY

The preliminary compilation of factory results gave a total of 203,000 metric tons as the crop of the island, evincing thus a total reduction of 16 to 17% on the normal.

The unfavourable weather conditions told heavily on small Indian planters especially on those whose methods and standard of cultivation are low. In some localities reduction of 50 to 75% on the normal were experienced on small planters' canes while estate canes of the same regions showed only 20 to 30% diminution. The general reduction in Plaines Wilhems on last year's returns approximated to 25% and in Pamplemousses and Rivière du Rempart 22%. On the other hand in the district of Moka the yield was slightly higher than last year while the Southern districts of Grand Port and Savanne together evinced a reduction of about 10%. In the Eastern district of Flacq the reduction approximated to 12% and in the western district of Black River, 15%.

The following figures give the final estimate of the 1923-24 crop, compared with total output of the seven preceding years.

Sugar Production in Thousand Metric Tons

Districts	1923 Final Estimate	1922	1921	1920	1919	1918	1917	1916
Pamplemousses & Riv. du Rempart	43.1	54.93	48.42	59.16	50.63	64.22	49.4	45.92
Flacq ...	34.8	39.56	33.77	45.35	36.86	43.69	39.7	35.04
Moka ...	30.9	29.39	28.04	37.58	35.24	34.70	31.7	31.38
Plaines Wilhems	15.7	20.95	14.54	21.36	19.38	19.34	17.9	15.74
Black River	7.3	8.65	6.15	7.57	6.54	6.25	6.5	6.08
Savanne ...	35.6	35.38	31.71	41.55	43.33	40.81	38.5	36.19
Grand Port	35.6	42.33	34.78	47.30	43.21	43.76	42.3	38.62
Total	203.0	231.19	197.42	259.87	235.19	252.77	226.0	208.97

Yield of Vesou Sugar.—Of the estimated total of 203 thousand tons, 98% will, it is anticipated, consist of vesou sugar, the proportion of first syrups is negligibly small while low sugars will probably reach 2% of the total.

The following table exhibits the progress, in this connection, for the past 10 years.

Year	% Vesou	Year	% Vesou
1914	82.01	1919	94.45
1915	82.60	1920	95.46
1916	80.23	1921	95.98
1917	89.85	1922	97.20
1918	94.50	1923	98.00 (estimated)

Factory work in 1923-24.—The average extraction of sugar per cent canes, was as anticipated, somewhat low in 1923, on account of the unfavourable weather conditions experienced. The general figure for the whole island is estimated at 10.47. Results for the previous decade are as follows :

Year	Commercial Sugar extracted % Cane	Year	Commercial Sugar extracted % Cane
1914	10.76	1919	10.42
1915	10.83	1920	10.76
1916	10.30	1921	9.90
1917	10.62	1922	10.58
1918	10.95	1923	10.47 (estimated)

Factories conditions in 1923.—During the year 1923, "L'Industrie" sugar factory was closed down and "Bassin" sugar factory will be closed down at the end of the present campaign. These two factories are comprised among those of small capacity and manipulated principally planters' canes.

In 1924 there will thus be left 50 factories in operation in the Colony.

During the year there has been little actual change as regards equipment of Sugar Factories, but modifications in processes of manufacture have been extensively tried and improvements in factory buildings commenced in previous years have been completed.

Formerly the average Mauritian factory was badly housed and badly arranged ; thanks however to the efforts made during the past few years, the general style and arrangement of the factory buildings shows a marked improvement.

At the same time considerable efforts have been made to improve the quality of the sugar turned out. Of new processes tried, special mention should be made of the introduction of the Bach process at Highlands Factory while in several others the use of Phosphoric acid compounds on a large scale has been extended.

The sulphuring of syrups has also been tried on a small scale with considerable success. Philippe filters are coming into favour and have been installed in several factories while one factory experimented on some scale with the Thomas Petree process.

In certain factories in the North of the Island the quality of the waters available for use in boilers is defective and one factory has established an apparatus for softening their boiler feed water.

Area under cultivation.—At the end of 1922 it was estimated that the area under cultivation was 166,400 arpents (173,000 acres), this is a decrease of 5,960 arpents over the figures for 1921. The decrease for the most part represents lands which either by their poor character, elevation or remoteness from factories, could not be cultivated economically in cane, under ordinary conditions and which had merely been placed under cultivation owing to the high prices for sugar which prevailed in 1919 and 1920 ; it also represents a certain area normally devoted to vegetable cultivation and which had gone under cane in consequence of the temptations of more profitable returns. With the return to more normal conditions these lands have once more gone out of cultivation under cane.

The total area cultivated under cane has probably attained somewhere about the maximum possible under existing conditions and the only extensions that can be looked for will be due to the increase of either transport or irrigation facilities which may result in opening up a few remote or extremely dry areas where cane cultivation cannot at present be economically practised.

During, 1923 but little change took place in the total area cultivated and at the end of the year the probable area under cane is estimated at approximately 167,000 arpents, more exact figures are not yet available.

Indian Cultivation.—At the end of 1922 the area cultivated in cane by Indian planters was estimated to be 76,850 arpents i.e. 46.2% of the total area under cane.

The following table gives the total area cultivated and the area cultivated by Indian planters for each of the last 9 years.

Year	Total area cultivated		Area cultivated by Indian cultivators		Percentage borne by area under cultivation by Indians	
					to total area	
	Arpents		Arpents		%	
1913	...	153,416	...	54,887	...	35.8
1914	...	159,172	...	59,132	...	37.2
1915	...	163,409	...	65,197	...	39.9
1916	...	167,560	...	72,338	...	43.2
1917	...	168,356	...	72,633	...	43.1
1918	...	168,670	...	73,725	...	43.7
1919	...	170,747	...	74,690	...	44.0
1920	...	171,845	...	77,250	...	45.0
1921	...	172,360	...	79,000	...	46.0
1922	...	166,400	...	76,850	...	46.2

(1 arpent: 1.043 acres).

No extensive morcellements took place during the year and while favourable conditions for the Cane Industry are maintained, it is unlikely that any appreciable resumption of this practice will be witnessed.

Conditions affecting the Sugar Industry.—The main economic factor affecting the Sugar Industry during the year was the revision of the labour law, which involved the termination of all contracts of engagements on estates, and the resumption, on a limited scale, of immigration from India. These developments took place as the result of a series of negotiations with the Indian Government which had lasted for several years, and, as a result thereof, in January 1923 a deputation, consisting of the Protector of Immigrants and representatives of the agricultural interests, of the island proceeded to India with a view to discussing with the Government the possibility of the resumption of Indian immigration on a restricted scale and under revised conditions.

As the result of the negotiations which then took place an agreement was arrived at whereby the resumption of immigration was arranged for, and the first consignment of immigrants under the new scheme arrived in the island on the 5th of December, consisting of 556 persons including 108 women, 73 boys, 48 girls and 11 infants.

Of the total number imported, 253 were distributed to estates while 63 were retained by the government for work especially in connection with Sanitary services.

Under the terms of the arrangement whereby immigration was resumed the colonial labour law was modified by Ordinance No. 12 of 1922 which abolished all contracts of engagements by indenture on estates and the concomitant penal clauses.

This ordinance came into operation on 8th May 1922; at the outset fears were entertained that this drastic modification in labour conditions would seriously hamper agricultural operations, particularly during the crop period.

These fears however to a large extent proved groundless and with the exception of a few local and short lived strikes on estates, the labour situation was, if anything, slightly easier than last year. The effects of the introduction of new labour cannot yet be said to be greatly in evidence owing to the short time which has elapsed since the re-introduction of labourers began.

Apart from these modifications in labour conditions, the extension of the employment of tractors and implements in the field has continued; there is no doubt that the advance which is to be recorded in this direction constitutes one of the most important events in the history of local agriculture of recent years which is having a very perceptible effect on the labour situation.

At the end of 1922 there were 47 tractors at work in the Colony, at the end of 1923 this figure had risen to 135. Continued interest was evoked in the question of finding suitable implements for cultural operations. As the result it appears moderately clear that for general ploughing comprising particularly the uprooting of cane stools and the breaking up of new land, by far the most suitable implement for Mauritius conditions is the two or three gang Disc Plough, while for the preparation of furrows, the implement ordinarily employed is some form of the double Mould Board Plough.

At present, interest centres particularly in this direction in finding some form of plough which will leave a square sided furrow, the ordinary forms of double mould board plough giving a furrow which is V shaped and which has to be cleaned out by hand in order to obtain the square sided flat bottomed form of furrow which is preferred locally for cane planting.

If a plough making a square sided furrow can be produced it will effect a very considerable saving in labour.

In relation to cultivators the search for implements which will do satisfactory work continues; a considerable number of new forms of cultivators have been introduced; as the result of the notes on this point published in the last two reports, several firms have made inquiries as to the possibility of supplying implements suitable for work locally.

The Daniel Cultivator alluded to in previous reports still continues to hold the field. This implement consists of a frame mounted on four heavy wheels and provided with three tines of heavy construction made of wrought steel which resists the wearing action of the gravelly types of soil so frequently met with.

For working in the interlines of growing canes, cattle are employed to a considerable extent for hauling implements; a number of tractors have also been tried and their use in this connection is extending. That which gives the most satisfactory results is the small size Cletrac, which does admirable work in virgin canes and up to second and third ratoons.

The spread of the stools in ratoons of a higher order than this however militates to some extent against its employment as the tractor track tends to damage the young shoots.

The operations of taking off the crop were conducted without serious difficulty although towards the end of November, water shortage began to make itself felt in the drier districts of the island.

Irrigation of Sugar Canes.—The area under irrigation in Sugar canes in the Black River district of Mauritius from the La Ferme reservoir was estimated to be about 3,000 acres during 1923.

Work on the La Nicolière scheme continues to make favourable progress and it is hoped that by the end of 1924, the first reservoir at La Nicolière itself may have become sufficiently complete to enable a certain amount of water to be delivered therefrom. Work on the second and larger reservoir at Midlands was commenced during the year.

The experiment station for the investigation of irrigation problems at Médine came into full working order during the year. This station is intended to solve a number of problems concerned with the irrigation of cane in Mauritius; and results have already begun to come to hand, they will be included in a complete report on the work when they are sufficiently far advanced to enable definite conclusions to be drawn.

In the meantime, a number of points emerge which are of importance, chief among these being the very great loss of water which takes place owing to seepage in channels and distributaries.

There is no doubt that this constitutes one of the most serious factors requiring consideration in connection with irrigation in Mauritius since in some cases in porous ground, the losses sustained in this way may amount to 50% or more of the total volume.

It is interesting to record that similar conclusions have been arrived at in Hawaii, as evidenced by a report recently issued by the Hawaiian Sugar Planters Experiment Station in which the question is reviewed.

It is further evident that considerable losses of water take place owing to uneconomical methods of application, while in relation to cane returns it seems clear that the season of planting is of great importance.

Disposal of the Sugar Crop.—The Sugar Planters' Syndicate continued operations during the year and there seems no reason to doubt that it has become established as a permanent feature in the economy of the Sugar Industry and is one which has greatly improved the conditions under which Mauritius sugars are marketed. The mean prices at which the crop 1920-23 were sold are as follows:

1920-21	...	...	Rs. 50.68 per 50 kilos
1921-22	...	...	12.05 "
1922-23	...	...	13.86 "

The Sugar market for the 1923-24 crop firmed up very considerably and although final figures are not available it is estimated that the average price will approximate to Rs. 18.85 net per 50 kilos.

Of the 1922-23 crop the bulk was exported to the United Kingdom. Since the war the tendency has been for Mauritius sugars to find their way on to the European market rather than to the Indian market where formerly the bulk of the crop was exported, this bring the direct outcome of the preference received by Mauritius sugar in the English market.

Pests and Diseases of the Sugar Cane.—The principal enemy of the sugar cane has continued to be *Phytophthora Smithi* and the campaign for its control was continued on lines followed in previous years, the cost being provided for by means of the special tax of 20 cents per ton of sugar exported which is levied for the purpose.

The following figures give the number of insects captured since the beginning of the campaign in 1911.

Year	Beetles captured	Year	Beetles captured
1911-12	26,460,187	1917-18	70,035,663
1912-13	16,055,556	1918-19	71,119,278
1913-14	36,484,130	1919-20	30,969,504
1914-15	51,356,507	1920-21	23,269,513
1915-16	42,511,241	1921-22	26,599,496
1916-17	72,292,689	1922-23	43,452,000

The total number of insects destroyed exceeds that of the previous year by some 18,000,000. The infection is now practically confined to two points in the infected area; it is by no means clear why the prevalence of the beetle has shown such a marked increase during

the year 1922-23 and it is possible that some factor is at work, the existence of which has not yet been recognised and this point is receiving investigation. Other pests and diseases have not been evidenced to any important extent.

Experimental investigations in relation to the Sugar Industry.—The appointment of a Botanist and a Sugar Technologist to the staff of the Department of Agriculture has enabled the investigations in progress to be considerably extended while the current work has been maintained. The extensive series of experiments with varieties of sugar cane have been continued and the average results obtained from the work for the past six years have been prepared for publication. As the result of the work that has been done a number of proved varieties have been placed in the hands of planters and there is no reason to apprehend danger from the breaking down of existing standard varieties in as much as a good selection is available to replace them if required.

Work in relation to manurial requirements of cane has been steadily extended, the work in progress includes trials with natural and artificial manures and also experiments with ploughing, cultivation and green dressings. The conclusions arrived at as the result of these experiments will in due course be summarised and published.

In the meantime results available indicate that there may be some foundation for the idea that manuring with artificial manures in addition to the applications of heavy dressings of organic manures may in some cases be overdone and that to some extent the heavy dressings of artificials often applied are not always productive of corresponding increases. An elaborate series of experiments on the application of molasses to soils has been carried to a conclusion the results of which corroborate the belief in the benefits to be derived from this process, and indicate that the increases observed are due to a variety of superimposed factors and not, as was formerly supposed, entirely to the stimulation of free living Nitrogen fixing organisms.

A series of investigations have been carried out on the growth of the sugar cane with special reference to the development of the young shoot from the planted cutting.

The newly established Botanical Division has taken up work on the measurement of the growth of canes and on the transpiration ratio of cane with special reference to the water requirement of the plant.

Experiments have also been started on selection of canes on account of vegetative vigour following the lines laid down by A. D. Shamel, this work is being carried out by the Sugar Technologist and the Botanist in collaboration.

In relation to Sugar Technology an investigation of the Bach process of clarification has been undertaken in conjunction with the authorities of the factory in which it has been installed.

An investigation was also begun into the causes of pollution of rivers by Sugar Factory waters by the Sugar Technologist in co-operation with the authorities of the Bacteriological Laboratory.

In relation to the teaching of Sugar Technology, the Sugar Technologist is engaged in working out a series of Laboratory Exercises designed to illustrate various reactions and processes in the manufacture of sugar.

In addition to the above, reference has already been made to the important series of investigations taking place at Médine in relation to the irrigation of canes. Furthermore mention should also be made of experiments that are being carried out by private companies on the possibility of producing fumier from cane straw and bagasse by the method of inoculation which has been worked out by the Rothamstead Experiment Station.

SUBSIDIARY AGRICULTURAL INDUSTRIES

Aloe Fibre.—Quotations for Mauritius hemp continued low till May when a considerable rise took place but of short duration. The total export for 1923 was 2,400 bales or 600 metric tons, worth Rs. 164,000.

The Exports for the past 8 years have been as follows :—

1916	...	...	...	...	7,118 bales
1917	...	...	...	...	5,647 "
1918	...	...	...	...	1,974 "
1919	...	...	...	...	10,139 "
1920	...	...	...	...	3,500 "
1921	...	...	...	...	1,150 "
1922	...	...	...	...	3,120 "
1923	...	...	...	...	2,400 "

Sisal.—Experiments with Sisal on Crown Land Plaine Lauzun were continued and an experimental reaping of leaves from the plantation was made in November 1923, the leaves being decorticated by the Corona Fibre machine.

The plantation of Sisal in the North part of the island to which allusion was made in the previous report, was subjected to reaping operations during the middle months of the year and the Robey decortivating machine, imported by the proprietors, operated.

Production of Alcohol.—The production of alcohol for the past 8 years, according to Treasury returns, is as follows :

1915-16	... 1,091,485 litres	1919-20	... 1,666,000 litres
1916-17	... 1,883,607 "	1920-21	... 1,900,000 "
1917-18	... 1,602,414 "	1921-22	... 1,749,994 "
1918-19	... 1,529,315 "	1922-23	... 496,237 "

Practically all the alcohol produced is consumed locally as rum. The operation of the Liquor Licensing Law has produced a very sensible effect in the consumption of liquor as evidenced by the greatly reduced production for 1922-23.

It is to be regretted that it has not been found possible to operate the distillery and etherification plant which was erected by private enterprise on a Sugar Estate in the North part of the Island during 1922.

Tobacco.—Efforts to develop the Tobacco Industry have been continued under the auspices of the Government during the year. Under the system of issuing free permits for cultivation without payment of tax a good deal of interest has been aroused in the cultivation of this crop, and up to the end of 1923 permits had been issued in respect of some 163 acres. It seems clear that the cultivation of tobacco presents considerable possibilities in Mauritius and I personally regard it as the most promising of all the many proposals for minor industrial development in Mauritius which have been put forward.

The present scheme aims at the production of the type of tobacco cultivated and manufactured in Bourbon which finds practically its only market in Mauritius. This trade is of considerable magnitude but lies in the hands of a small group of Chinese merchants and manufacturers who have practically entire control of the local market.

The operations which have been undertaken have resulted in the production of tobacco which is fully equal to the imported article but owing to the manipulations of vested interests, sales of Government produce have been rendered extremely difficult and it has in consequence been found necessary for the present to stop the issue of further free permits to cultivate tobacco; if these difficulties can be removed, there is every reason to believe that in due course, a sufficient quantity of tobacco of this type can be produced in Mauritius to satisfy the local demand which was the idea underlying the scheme when it was first undertaken.

Efforts to encourage the cultivation of tobacco of other types suitable for export and for sale on the open market offer scope for developments, and experiments with a view to testing this point are projected.

Tea.—The tea industry continued in a languishing condition. Notwithstanding the fact that local teas receive protection to the extent of about Rs. 0.60 per kilo, they are unable to compete with the imported Ceylon and Indian teas.

Statistics of local production are as follows :—

1888-97		5,000 kilos
1898-07		32,000 "
1908-10		35,000 "
1911-15		38,000 "
1916-17		30,000 "
1917-19		32,000 "
1919-21		20,000 "
1922-23		25,000 "

The quantity imported averages 180,000 kilos of which 160,000 come from Ceylon.

Cocoanuts.—No change of importance occurred in this industry, for which there is probably considerable scope for development. During the year, 769 tons of copra were imported from the Oil Islands (dependencies of Mauritius) and 719 tons re-exported.

Vanilla.—No developments in relation to Vanilla have to be recorded during the year.

Food Crops.—The cultivation of maize for local consumption has been severely handicapped by importations from South Africa. Owing to the high level of wages maintained throughout the year and the fact that the maize cultivation is almost entirely in the hands of small cultivators, it is becoming increasingly difficult for locally produced maize to compete with the imported article.

As a result, the area under cultivation in maize is steadily decreasing and it was not found possible to operate the Maize Sécherie on this account during the year.

The total area under food crops showed a further reduction as compared with 1922, in which latter year the acreage reached 8,500. At the end of 1923 it is estimated that it will not exceed 8,000.

Live Stock.—The importation of cattle from Madagascar numbered 13,476 head, an increase of 562 head over the record established in 1922. Of these animals, approximately 12,000 were slaughtered, the remainder being sold as draft animals.

The influence of the situation on the local cattle breeding industry which was drawn attention to in the previous report has been further in evidence during the year under review. Owing to the low level of exchange for the Franc, Madagascar animals can be imported into Mauritius and sold at a considerable profit at prices very much below those at which they can be produced locally. This situation has gone far to discount the efforts made to improve local breeds of live stock and the small cattle breeding industry which seemed so full of promise a few years back and which had attracted the attention and support of some of the

leading agriculturists has in consequence entered on a period of decline and several large herds have been disbanded and sold.

A factor which has further influenced the situation has been the rapid spread of mechanical traction both for cultivation and for road haulage. In consequence and notwithstanding the fact that the crossbred animals which were being produced on estates as the results of the efforts fostered by the Government, show greatly superior qualities to those imported from Madagascar, the market is entirely for the cheap imported animal under existing conditions.

The Stock Farm of the Department of Agriculture has been maintained. No sale was held during 1923 but arrangements were completed for a sale early in 1924. The loan of stud animals to estates has been continued but the work of the Stock Farm and its utility have been severely discounted by the factors indicated above.

Interest in relation to dairying however continued to increase; the small experiment inaugurated by the Government in the creation of an experimental dairy on Crown Lands at Curepipe has met with very considerable success; the work of this Dairy is reviewed in the second part of this report; the results up to date show that the highlands of Mauritius are better suited to dairying than was originally believed to be the case. On the results of the experiment it has been decided to erect a thoroughly modern and well equipped Dairy building to accommodate 52 cows, together with necessary offices etc., with the object of supplying high grade milk for consumption in public Institutions, thereby affording a demonstration of the possibility of adopting modern Dairy practice in the Colony.

Work on the new buildings was commenced in November and it is expected that they will be ready for use early in 1924.

Animal Diseases.—Animal diseases have been markedly less in evidence during the year under review than for a number of years past. The systematic campaign for the destruction of Surra which was begun in 1922 has been continued and extended and the results have been seen in the almost complete absence of cases from the middle of August to the beginning of October, while during the latter months of the year, when the occurrence of Surra cases can be regularly looked for, the number recorded falls far below that obtained in 1922 notwithstanding the fact that the regular and systematic taking of samples of blood from animals in all parts of the island has resulted in the bringing to light of a number of cases which otherwise certainly would not have been detected.

There has been no recrudescence of East Coast Fever and it is hoped that the energetic action taken in relation to the outbreak of 1922 has succeeded in stamping out the disease.

One outbreak of Red Water Fever was detected on a herd of creole bullocks.

Public dipping tanks erected at Pamplemousses, Rose Hill and Flacq were opened for dipping until July and were closed during the cool months of the year, from July to December, owing to the fact that during crop it was impossible to persuade owners to take advantage of the facilities offered. No further direct light has been shed on the degree of protection from Surra conveyed by the practice of dipping. On the other hand, the fact that Surra has been recorded in a number of herds of Cattle which were regularly dipped tends to indicate that the protection conveyed against Surra by the practice of dipping may not be as great as was formerly supposed.

No further progress has been made with the proposals for the introduction of compulsory dipping.

CO-OPERATIVE CREDIT SOCIETIES

No particular progress has to be recorded in connection with Co-Operative Credit Societies and difficulties were experienced in connection with the operations of several. The work of these Societies is reviewed in a special report thereon presented in August.

RODRIGUES

The scheme for agricultural developments in Rodrigues made considerable progress during the year and a number of new lines of work were undertaken. Among the noteworthy departures may be mentioned the holding of an Agricultural Show in October, the institution of a Prize Holding Scheme, the improvements of methods of leasing lands, the introduction of stud animals. There is no doubt that the dependency offers a considerable field for agricultural efforts, the main need being the discovery of suitable crops for growth and the organisation of markets and credit. In this latter connection it is hoped that the introduction of the Co-Operative credit system which will shortly be undertaken will be productive of beneficial results.

The work of getting the Station into working order was continued. Details in this connection are dealt with under the head "Rodrigues" in the report on departmental work.

The Stock Industry of Rodrigues has not made any marked degree of progress during the year owing to the competition of animals from Madagascar and the export of cattle has in consequence been extremely limited.

Pig raising however continued to prove remunerative and considerable exports took place during the year, the number exported being 1663.

The question of the possibility of improving conditions in relation to the pig raising industry are under consideration by Government. There would appear to be possibilities for the raising of pigs on extensive lines provided proper facilities existed.

The herd of donkeys established by Government has made good progress and there would appear to be prospects for developments in this direction.

Two of the chief needs of the dependency are better roads and improved water supplies. Both these questions are receiving attention. The need for reafforestation in Rodrigues is considerable and during the year forestry operations were taken over by the Agricultural Department. At present attention is being chiefly directed to the provision of shade and shelter on the Cattle Walk and the protection of springs and water courses, the latter point being especially important in view of the severe floods to which the low lands in Rodrigues are subjected during periods of heavy rain.

The Director of Agriculture and the Government Veterinary Surgeon visited the Dependency in December.

HIGHER INSTRUCTION IN AGRICULTURAL SCIENCE

During the year the Agricultural College scheme was got into working order and a start was made on the new curriculum. Details in relation thereto are dealt with in the special report on the College of Agriculture presented separately.

Work was commenced on the new buildings in March 1923. The Foundation Stone was laid by His Excellency Sir Hesketh Bell on July 11th 1923. By the end of December the erection of the first storey had been completed.

It is hoped that the buildings will be ready for occupation by the end of the current year.

It is believed that the scheme is capable of exercising a very considerable influence for good on the Agricultural conditions of the Colony.

PART II.

WORK OF THE DEPARTMENT OF AGRICULTURE DURING THE YEAR 1923.

Staff Changes.

Mr. E. F. Shepherd B. S. A., Botanist and Mycologist arrived in Mauritius and took up his appointment in January 1923.

Mr. C. A. O'Connor, Agricultural Instructor and Inspector of Co-Operative Credit Societies, arrived in Mauritius and took up his appointment in February 1923.

Mr. F. E. Lionnet, Government Veterinary Surgeon, returned from leave of absence in April 1923.

Mr. P. R. Dupont, Additional Assistant Director of Agriculture, relinquished his appointment and retired from the service on account of ill health in July 1923.

Mr. F. Leclerc was confirmed in his appointment as Overseer, Central Experimental Station in September 1923.

Mr. E. Lesur was appointed to the post of Officer in Charge Medine Irrigation Experiment Station in April, consequent on the resignation of Mr. I. Rivière.

Mr. Louis Baissac was appointed Sugar Technologist in the Department in connection with the College of Agriculture scheme in April 1923.

Mr. N. Mc Gregor was appointed temporarily as Assistant Agricultural Superintendent in September 1923.

During the year the work of the Department again expanded very considerably. The operation of the various divisions are reviewed in the following pages.

ENTOMOLOGICAL DIVISION.

The Entomologist reports as follows:—

In January, Mr. Shepherd who had been appointed as Botanist took charge of the Mycological and Botanical work, which during recent years was performed by the Entomologist.

Insect Pests.

Red Ant.—*Solenopsis germinata*.—The red ant has proved extremely harmful during the year, and reports of its damage were continually received. The pest attacks live plants to a large extent. Several remedies were suggested and gave variable results. Data obtained respecting its habits and life-history are still insufficient to lead to definite and practical measures of control.

Scolia Oryctophaga.—The results of the mission of the Entomologist in Madagascar were published in the Bulletin of Entomological Research reprints of which were distributed amongst planters interested in the matter.

In July and during the ensuing months, the imported wasp from Madagascar—*Scolia Oryctophaga*—the natural enemy of *Oryctes Tarandus*, was noticed in great numbers at the Central Experiment Station, Réduit and at the same time at Joli Bois; at both places the imported specimens were liberated in 1917.

Stomoxys nigra as carrier of *Trypanosomiasis*.—A series of experiments were started respecting the transmission of Surra by the horse fly—*Stomoxys nigra*—but these could not be continued through pressure of routine work. It is proposed to resume the experiments when greater facilities for this special kind of research are available.

Plant Inspection

116 separate inspections of consignments of plants, tubers and fruits were made at the Customs and at the Parcels' Post Office.

399 cases fruits and 123 parcels of tubers and plants were examined, showing a very great increase as compared with last year.

Poultry

Birds received from South Africa were on two occasions stolen; they again suffered from scab and from diptheria; for these reasons the poultry run was shifted to the Cattle Station ground and a rabbitry added thereto.

An investigation in relation to some obscure diseases prevailing on fowls from two to four months of age, led to the conclusion that the birds were affected with avian Typhosis.

Campaign against Phytalus Smithi

The results of the 1922-23 campaign were embodied in a Departmental report submitted in September. This report was printed and distributed amongst those concerned. The number of beetles destroyed in 1922-23 was greater than in 1921-22 by 18 millions.

Toads

In October toads imported from South Africa proved to be very troublesome in the district of Moka. An investigation was made and proved that the life cycle of this Amphibian is complete in less than one year. A report on the question was submitted in November.

Educational

32 Lectures were delivered on Entomological and Zoological subjects to Students of the School of Agriculture.

CHEMICAL DIVISION

The Assistant Chemist reports as follows:

The following samples were analysed during the year:

	<i>Samples</i>	<i>Dosages</i>
Coin Analysis	1	3
Tea	3	21
Bran and Fodders	3	14
Coal	3	18
Engine Oil	5	20
Lime	12	13
Water	15	62
Guano Phosphates	6	6
Fumiers and Mixtures ..	24	60
Guano mélangés	23	113
Dippings	83	83
Artificial manures	7	10
Miscellaneous	25	58
Soils, Physical and Chemical Analyses	12	64
Other determinations in soil experiments	6	36
Cane and cane juice ..	868	1,736
	<u>1,096</u>	<u>2,317</u>

Apart from the ordinary routine work of the Division, physical and chemical analyses of soils in relation to the application of molasses were completed and the results published.

Further researches have been started on the transformation of manures in soils. Physical and chemical examinations were also started on the soils of the Médine Irrigation Experiment Station.

Educational

During the year the Assistant Chemist and the Scientific Assistant of the Chemical Division delivered lectures to the Students of the School of Agriculture until the yearly examination in June.

The new courses for the College of Agriculture began in September of this year and during the first term, 42 lectures were delivered to the first and second year students by the above officers who also supervised students practical work during 56 laboratory periods.

BOTANICAL DIVISION

The Botanist and Mycologist reports as follows:

The work carried out during the year comprised:

- (1) Bacteriological examination of soils.
- (2) Investigations on the physiology of the Sugar cane.
- (3) Work on selection of Sugar cane.
- (4) Investigation of plant diseases.
- (5) Lectures to Students of the College of Agriculture.

Bacteriological Examination of soils.—Under this head there were three distinct investigations.

The first comprised a determination of the effect of the addition of molasses on the flora of the soil. The second investigation was that of the effect of water from the condenser of a wood-gas engine on the soil flora. The Laboratory results pointed to the conclusion that such water exerted no marked effect on the development and activity of soil organisms. The third investigation comprised a study of the morphology and staining reactions of *Azotobacter* sp in Mauritius soils.

Investigations on the Physiology of the Sugar Cane.—During the year under review experiments were inaugurated with a view to investigating certain points in the physiology of the Sugar cane. The work included investigations on the growth and transpiration ratio of this crop plant and also an experiment on the preservation of cane tops. Growth measurements have been taken of selected stalks in the fields at Réduit, Pamplemousses and Médine Experiment Stations respectively. At the last station growth measurements were taken in fields subjected respectively to different rates of irrigation. At the end of the growing season selected mature stalks from the plots in which growth measurements had been taken, were brought to the laboratory and joint measurements made on each cane and recorded. Comparisons will be made between the curves of growth in the field and the curves of joint length of canes from the same plot. These curves will be correlated with the environmental conditions of the canes during their growth period.

The determination of the transpiration ratio of the sugar cane is being conducted at the Central Experiment Station, Réduit. The variety selected for the investigation is the White Tanna. This determination consists of measuring the ratio between the quantity of water transpired by the cane during its growth and the weight of dry matter formed in the same period.

The results should aid considerably in solving irrigation problems.

The question of cane top preservation is being investigated with a view to discovering a method of preserving cane tops for planting in a viable condition for several months. If this could be accomplished, it would have considerable practical importance.

Improvement of Cane Varieties by selection

This work was started during the year in collaboration with the Sugar Technologist, the method followed being that of R. D. Shamel in Hawaii. This method consists of selecting for planting material stalks from stools possessing certain qualities making them superior to other stools in the field, planting the cuttings so obtained in progeny plots, one plot for each stool, selecting cuttings from the progeny plots in a similar manner, and, in the third season, making a mass selection of cuttings from the best progeny plot. The work in Hawaii seems from all accounts to be leading to improved strains of the varieties on which selection is being conducted and the method is being tried under Mauritius conditions. Selections have been carried out at Highlands and Mon Désert (St Pierre) Estates and at Médine Irrigation Experiment Station and progeny plots planted. The varieties that are being tested are the White Tanna at Highlands and Mon Désert and the White Tanna and R.P. 6 at Médine. Selections have also been made at the Réduit Central Experiment Station on the varieties R.P. 8, R.P. 73, 35/1182, 55/453 and 33/231.

Investigation of Plant Diseases

Filao (Casuarina equisetifolia).—The so-called "Smut" disease continued to cause losses in many parts of the island during the year. In some districts the disease spreads rapidly in the filao plantations. In others the outbreaks are confined to small areas in the plantations. In nearly all cases the fungus "*Trichosporium vesiculosum*" causing the smut in the bark, was observed on diseased trees, but its parasitic nature has not yet been proved. The disease is due to a root parasite, which works its way up through the wood of affected trees. "*Trichosporium vesiculosum*" appears to be able to attack a tree only after it has been weakened by the root parasite or some other cause.

Sugar Cane (Saccharum officinarum).—"Red Rot" caused by *Colletotrichum falcatum* occurred in a field of St. Aubin canes at Britannia Estate. Control measures advocated were the abandoning of ratooning in that field and the burning of the stubble.

Light infections of "Smut" (*ustilago sacchari*) existed during the early part of the year; in December a plot of D.K. 74 first ratoons at Médine Experiment Station was observed to be suffering from a rather high infection, but on being given better growing conditions the plot threw off considerably the effects of the disease and now promises to yield a good crop.

A rather severe outbreak of *Leaf spot* infection occurred during the latter part of the year at the Mount Estate.

Stools of canes with severely diseased roots were sent to the laboratory from the Moka district.

Other crop diseases examined during the year were as follows:

Tobacco (Nicotiana glauca).—"Mosaic Disease." "Leaf Spot" caused by *Cercospora nicotianae*. "Wilt" caused by *Bacillus solanacearum*.

Brinjelle (Solanum melongena).—"Wilt" caused by a *Fusarium* probably the imperfect stage of *Nectria ipomeae*.

Tomato (Lycopersicon esculentum).—"Blight" caused by *Phytophthora infestans*.

Potato (Solanum tuberosum).—"Blight" caused by *Phytophthora infestans*.

Cucumber (Cucumis sativa).—"Mosaic Disease."

Beet (Beta vulgaris).—"Leaf Spot" caused by *Cercospora beticola*.

Bean.—"Leaf spot" caused by *Phoma* sp. "Leaf spot" caused by *Cercospora cruenta*. "Leaf spot" caused by *Isariopsis griseola*. "Rust" caused by *Uromyces appendiculatus*.

Pea (Pisum sativum).—"Powdery mildew" caused by *Erysiphe polygoni*. "Leaf spot" caused by *Ascochyta pisi*.

These two fungi in most instances existed in association on the same leaves.

Manioc (Manihot utilissima).—"Die-back" caused by *Gloeosporium manihotis*.

Onion (allium cepa).—Onions were in places badly infested with "blight" or "downy mildew" caused by "*Peronospora schleideni*." In all cases advanced stages of the disease, were followed by attacks of "black mold" (*Macrosporium parasiticum*). The disease can be controlled by Bordeaux mixture spray and collecting and burning of crop refuse.

Leek (allium Porrum).—"Blight" or "downy mildew" caused by "*Peronospora schleideni*" followed by "Black mold" (*Macrosporium parasiticum*).

Coffee (coffea sp.).—"Rust" caused by "*Hemeleia vastatrix*" and "Anthracnose" caused by *Colletotrichum coffeanum*, were common, the latter attacking fruit as well as leaves.

"Sooty mold" (*Capnodium* sp.) was widespread.

Mango (Mangifera indica).—"Leaf spot" caused by *Colletotrichum gloesporioides*.

The same fungus is probably responsible for the "blossom blight" which was of common occurrence on the island during the year.

Peach (Prunus persica).—"Shot hole" (cause undetermined) and "rust" (caused by *Puccinia pruni-spinosae*) were prevalent and existed chiefly in association on the same leaves.

Educational

The Botanist and Mycologist delivered two lectures and supervised two laboratory periods per week in Botany and Mycology in accordance with the syllabus for first and second year students in the College of Agriculture.

VETERINARY DIVISION

The Government Veterinary Surgeon reports as follows:

Importation of Animals

During the year the following animals have been imported into the Colony. Previous to their landing they were examined on board and some of them have undergone an observation period before being allowed free pratique.

Madagascar bullocks	...	13,465
Horses	...	165
Donkeys	...	13
Mules	...	52
Ponies (Sandalwood)	...	198
Bulls and Buffaloes	...	11
Pigs	...	20
Dogs	...	25

Inspection of Government Animals

Animals of the following Departments have been attended to for the following:

Police Department.—1 mare for colic; 1 mare for cutaneous erosion; 1 horse for rheumatism; 1 horse for wounds.

Medical and Health Department.—1 donkey for Meningitis; 1 mule for limping; 2 bullocks for abscesses.

Barkly Asylum.—1 cow for Mammitis.

Curepipe Dairy.—2 cows for bruising; 1 for Mammitis; 1 cow for calving.

Three stud bulls have been stationed in the districts, one at Bénarès, 1 at Wolmar and the third at Palmar Estate.

Contagious Diseases

Red Water.—During the year a severe attack of Red Water was detected on a herd of 56 creole bullocks. Thirteen of them were on the following day inoculated with Trypan blue. Twenty-four hours after, one of the inoculated animals died whilst fever and hemoglobinuria ceased with the twelve others. During the 18 following days ten other animals showed symptoms of the disease but being treated in time, they rapidly recovered. The percentage of recoveries—96%—recorded is remarkable.

Some weeks after, a $\frac{3}{4}$ Holstein Friesland at Réduit was infected with the same disease. After two inoculations with Trypan Blue at intervals of three days, the animal recovered.

Surra.—A systematic campaign against Surra was instituted in 1922. The procedure consists in tracking cases of the disease and dealing with them. Bovines only are allowed to be treated, equines affected with the disease are immediately destroyed, experience having shown that while bovines can be cured if treated with Soamin and arsenious acid, the same remedy has no beneficial effect on equines.

In relation to the campaign the following figures are worthy of record. During 1923, 5,968 blood smears were examined and 150 cases of infection detected at 89 different centres. It is not yet possible to state precisely which parts of the island are most infected

as Surra is in evidence everywhere. On the 150 affected animals, 108 were found to be Madagascar bullocks, 24 creole bullocks, 4 mules, 4 horses, 3 ponies and 7 donkeys. When cases are detected on animals living in herds the owners are urged to have the whole lot treated. As a result, 1069 animals have been treated with Soamin and Arsenious acid.

Madagascar bullocks are strikingly more susceptible to Surra than Creole ones. Thus in a herd of 89 animals, of which only two were Madagascar bullocks, these two alone were found to be infected. In another herd of 189 animals 7 were Madagascar bullocks and of these 4 were infected whereas no trypanosomes were detected in the blood of any of the 182 creole bullocks. This remarkable susceptibility of Madagascar animals ought to be carefully noted by all breeders in their own interests. The first object of the campaign has fully been attained. During the present year from the middle of August to the beginning of October no severe outbreak of Surra has been detected in the island while inspections made last year during the same season led to the discovery of many cases. It is not anticipated that Surra can be got rid of in such a small interval, yet there is reason to hope that with the assistance of cattle breeders it will be possible in a very few years, if not to eradicate the disease at all events to restrict its incidence within narrow limits.

Meat Inspection.

Inspection of the slaughter houses of the Colony have been made on several occasions. The places have been found clean; on two occasions seizures have been maintained. Two farrow heifers under age have been allowed to be slaughtered.

Animal Quarantine Station.

During the year the scheme for the provision of a Quarantine Station for animals which had been under consideration for a number of years past was brought into force and the premises of the military fortification at Fort William were converted for the purpose. The site possesses many advantages for the purpose in view and it is hoped that this provision will at last give to the island a measure of protection against the introduction of animal diseases the absence of which has been on more than one occasion made itself severely felt in the past.

During the year four separate consignments of imported animals were quarantined at the Quarantine Station. The total number of animals so quarantined being as follows:

Cattle	...	...	39
Horses	...	...	10
Goats	...	...	1
Dogs	...	...	1

In addition the special quarantine station for dogs is maintained at Réduit and during the year 19 dogs have been kept under observation.

STATISTICAL DIVISION

The Statistician reports as follows:—

The Blue Book Statistics relative to Agriculture were supplied to Government. Statistical data were also supplied to the International Institute of Agriculture, Rome, to the Board of Trade, to the Colonial Secretary's Office, the Immigration Department &c. Monthly reports on weather and crop conditions were issued and the usual crop forecasts prepared and submitted to Government. Results of various experiments in connection with trials with different cane varieties were compiled with a view to publication.

Lectures in Agricultural Meteorology were delivered weekly to second year students during the months January to May and lectures in Physics, bi-weekly to First and Second Year Students, from September to December.

The Meteorological service of the Department continued under the general supervision of the Statistician and the results of the observations are reduced and tabulated by him. Observations of temperature, relative humidity and rainfall are taken at the Central Experiment Station, Réduit and at Secondary Stations at the Royal Botanical Gardens, Pamplemousses; Nursery Garden, Curepipe; Abercrombie Nursery, Port Louis; Mahebourg Demonstration Plot and Médine Irrigation Experiment Station, Black River; while a number of Sugar Estates voluntarily contributed rainfall observations. These data are reduced and coordinated to assist in the work of crop forecasting and for general investigations on problems connected with climatological factors.

The Statistician acts as Secretary to the Board of Agriculture and to the Advisory Board of the College of Agriculture. He acted as Inspector of Co-Operative Credit Societies until February 6th and as Registrar to the College of Agriculture from February 14th.

SUGAR TECHNOLOGY DIVISION

The Sugar Technologist reports as follows:

This new Division of the Department of Agriculture was opened on April 1st.

A preliminary study of the different methods of analysis of molasses has been started and will be completed next year. The work has been undertaken with the aim of fixing a general method to be proposed for adoption in all the Sugar Factory laboratories in the island.

For the production of sugar of a better grade, many Factories are using rather high proportions of sulphurous acid gas and phosphoric acid in the clairce or concentrated cane juice. It was necessary to determine if under factory conditions and during the boiling to

masse cuite any inversion occurs. A series of experiments were made under normal conditions, the temperature being kept below 70° C. The conclusion is that under such conditions no inversion occurs. Experiments will be undertaken to determine the optimum temperature for good settling of clairce without inversion.

A preliminary study of the causes of pollution of rivers by factory waters has been started in co-operation with the Director of the Bacteriological Laboratory. It has not yet been carried far enough to permit any conclusion being drawn.

Before and during the crop the following Factories were visited : Highlands, St. Aubin, Beau Vallon, Mon Désert (St. Pierre), Bel Ombre, St. Félix, Rose Belle, Savannah, Ferney, Deep River, Queen Victoria, Constance, Argy and Rich Fund. At many of these Factories advice has been given in compliance with the request of the Managers or Factory Managers.

For Highlands and Argy official reports were transmitted. The most important work undertaken was the study of the application of the Bach process for the treatment of the "clairce" at Highlands, it absorbed considerable time, necessitated numerous visits to the Factory and a great number of analyses. Many defects had to be corrected in the provisional installation before satisfactory results were obtained. The process worked well during the last part of the crop, the sugar produced being of a higher standard than any other on the local market. There will probably be but little to be done next crop for the perfect working of the process.

Selection work according to the sugar cane on the Shamel's method has been started in co-operation with the Botanist ; the most important work on these lines has been done at Highlands Estate.

Educational

A course of 16 lectures in Sugar Technology and a few on sugar cane cultivation were delivered to the Third Year Students and Sugar Factory Chemists from April to June. From the beginning of September term regular lectures in Elementary Organic and Sugar House Chemistry have been delivered to the Second Year Students, practical demonstrations have taken place in the Laboratory and at Mon Désert Sugar Factory.

AGRICULTURAL DIVISION

The Agricultural Instructor reports as follows :

Food Settlements.—The Food Settlements at St. Martin, St. Thomas and La Ferme covering an area of 258 acres made progress during the year. Additional plots were taken up for planting and it is hoped that this extension will continue until the whole area is under cultivation.

The chief crops grown were maize, manioc, sweet potatoes and vegetables. There are also smaller plots of tobacco.

Demonstration plots exist at St. Martin and La Ferme where the small planters can observe the best methods of planting and the growth of new varieties.

Officers of the Department regularly visited the settlements in order to give necessary advice. The St. Martin-La Ferme Co-Operative Credit Society is of great assistance to the settlers, who are also shareholders of this Society, by providing them with loans for the purchase of seeds, manure and for the initial expenses of clearing and planting. Loans amounting to Rs. 1,656 were made ; they were with few exceptions punctually repaid when due.

Damages to the crops are sometimes caused by stray cattle from the neighbourhood.

Money prizes were again awarded this year for the best kept plots both at St. Martin and La Ferme.

Maize Sécherie.—Owing to the importation of maize from Madagascar and other countries the Maize Sécherie was not operated during the year.

The "Old Grand Port" Co-Operative Credit Society continued to do useful work by advancing small loans to the settlers in the locality ; the existence of this Society is much appreciated by them.

Co-Operative Credit Societies.—There are thirty-five Co-Operative Credit Societies in the Colony. Two new Societies "La Flora" and "Rivière du Poste" were registered during the year. The "St. Martin" and "La Ferme" Societies were amalgamated. One Society "St. Julien" was liquidated. The inspection of these Societies took up most of the time of the Agricultural Instructor since his appointment. The work of the Societies is reviewed by the Registrar in a separate Annual Report.

School Gardens.—The school gardens were placed under the control of the Department of Agriculture in 1921. There are at present sixteen in the Island. A new one was opened at Palma this year, while that at Bambous was shifted to a more suitable site. Wire netting and posts for fencing were supplied to those recently created. A supply of seeds and plants was sent to all the gardens throughout the year. Regular visits were paid by Officers of the Department to observe progress made and to give necessary advice.

Money prizes were awarded to the best kept gardens as follows :—

1st Prize of Rs. 50 to the School of	Rivière des Anguilles
2nd	" 40 " Souillac
3rd	" 35 " Quatre Bornes
4th	" 30 " Rose Belle
5th	" 25 " Highlands

It is hoped that by creating a spirit of emulation between the different schools greater progress will be obtained in future, and that other schools which have no gardens attached to them, will follow the good example given.

All school gardens were regularly inspected by the Agricultural Instructor and his Assistant. In all 71 visits were paid to School Gardens during the year.

Tobacco Cultivation.—Areas of tobacco were regularly inspected by the Assistant. Agricultural Instructor throughout the year and reports furnished thereon. In all 55 visits were paid.

Stock Garden.—The old Stock Garden established at Réduit for the purpose of supplying planting material to the School Gardens has been improved, it now in addition to its fulfilling its former purpose, serves for the instruction of students in practical Horticulture.

Educational.

Ten Lectures were delivered to Students on the cultivation of certain crops during the period September to December and 13 periods of instruction in practical Horticulture were given to Students during the same period.

DIVISION OF EXPERIMENT STATIONS.

Réduit Central Experiment Station.

The Agricultural Superintendent reports as follows:—

Experiments with canes.—Sugar Cane experiments have again been carried out in different parts of the Colony. At Réduit, Pamplémousses, Labourdonnais, Long Mountain, Highlands and Britannia, experimental plots were cut, reaped and weighed and samples of each variety of cane sent to Réduit for crushing and analysis. During the year, new cane varietal plots have been established at the following places: Réduit, Pamplémousses, Long Mountain and Bagatelle. The experiments with the cutting and leaving of “Babas shoots” were completed this year, and the results placed on record. At Réduit, the manurial experiments with molasses and Sulphate of Ammonia was continued on the 1st ratoons and will be continued next year, on second ratoons. The Nitrate of Ammonia experiments were completed and the results recorded. The experiments with green dressings, molasses organic and inorganic manures was continued, the field being planted in canes and the manures and molasses applied. A new experiment was begun at Réduit to determine the effect of ploughing land before planting canes, one half of the field being ploughed and the other half holed in the ordinary manner. Molasses and pen manure have been applied to parts of the field and cross dressings of artificial manures will be applied early in 1924. Experiments to determine the harmful effect of fire on canes were carried out at Réduit and Pamplémousses, the result being placed on record. A considerable number of cuttings of selected varieties of canes have been distributed free amongst planters, and 300 selected canes were sent to the Madagascar Fair.

As many as 391 canes and 2,175 selected cane cuttings were sold to planters during the year. Of the seedling canes raised at Pamplémousses during the year 1922, and which were planted out in one hole trials, 112 have been selected for further trial and planted out in 6 hole plots. From the 6 hole trials of 1920 seedlings raised at Pamplémousses 30 were selected and have been planted out in 30 hole trials. Of the 1,090 seedling canes raised at Pamplémousses this year 990 have been selected for further trial and planted out in one hole trials. Altogether, 901 varietal plots have been reaped experimentally, in each case samples of cane were sent to Réduit for crushing and analysis of juice. The total number of samples crushed in the experimental mill at Réduit was 984, in each case the juice was weighed and sent to the chemical division for analysis. Reaping of the crop was completed on December 7th, the total yield of canes being 87,720 kilos, all of which were sent to Trianon mill.

Experiments with other Economic Crops

Experiments with the following food crops have been continued during the year, both at Réduit and Pamplémousses:—

Maize—breeding by selection trials		
Sweet Potatoes—trials with 48 varieties		
Eddoes and Tannias	8	”
Yams	12	”
Ground nuts	12	”
Manioc	4	”

Again, a large amount of tubers, vines and cuttings have been distributed among planters and the public, a small charge having been made to cover the cost of packing and transport. Many thousands of tobacco plants have been raised and sold to planters and the crop of tobacco grown at Réduit and Pamplémousses was sent to the Government Tobacco Factory. Three new varieties of tobacco seed were received from the Imperial Institute late in the year, these have been sown at Pamplémousses and, so far, show good promise, the plants obtained will be planted out at Réduit and Pamplémousses. There has been a big demand for two of the fodder grasses introduced from Africa and propagated here namely “Elephant Grass” and “Kikuyu” and a very large amount of planting material has been distributed all over the Colony.

A consignment of Onion seed was received from Teneriffe, four pounds being sent to Rodrigues, most of the remainder being sold to planters.

The Austin Tractor and ploughs have been used whenever opportunity presented itself and good work has been done by them. Plots of *Chenopodium*, yielding *Chenopodium* oil used in the treatment of "hookworm" have been established at Réduit and Pamplémousses with a view to the making of a distillation later.

Stock Farm.—Good progress has been made during the year, the following births being recorded :—

2	pure bred Hissar	Bull calves
1	"	Heifer calf
1	"	Ongole Heifer calf
1	"	Afrikander Bull calf
2	"	Holstein Friesland Heifer calves
1 $\frac{3}{4}$	th bred	" " Bull calf
1	Grade	" " Bull "
1 $\frac{3}{4}$	bred	" " Heifer calf
1	pure bred Mysore	Bull calf

—
Total—11 calves.

The Friesland Bull calf Réduit Chieftain VI, died of Enteritis on June 6th, this being the only death occurring during the year. The following pure bred cattle were added to the Stock Farm during the year :—

1	Bull and 1 Heifer	Afrikander
2	Bulls and 4 cows	Scindi
1	Bull	Punjabi.

In June it was decided to raise all calves coming from milch cows, by hand, and to send the surplus milk obtained to Moka Hospital. This has been done, the total number of litres of milk supplied from June 21st to December 31st inclusive, being 3,527 litres. The following pure bred bulls stood for service at the named estates during the year :

Ongole bull, Hathi 2nd—Wolmar, June—September.

—Palmar, October and is still there.

Hissar bull, Amir 2nd—Bénarès, June—October.

The following bull services were recorded at the Stock Farm during the year, this does not include services on Estates :

Pure bred Friesland Bull, Elsenburg	...	...	37	services
Beau Brommel				
Pure Bred Ongole Bull, Hathi 1st	...	...	2	"
" Hissar " Amir 1st	...	...	4	"
" " Amir 2nd	...	...	1	"
" Mysore " Maharajah 1st	...	...	1	"

Total... 45 services

A sale of surplus cattle will take place in February, 1924. Early in the year, an experiment with the making of ensilage from maize was successfully carried out, the cattle ate the finished product readily. A similar experiment is at present in progress using cane tops, the results of which are not yet to hand.

A maize crusher has been installed at Réduit and has proved effective and useful. Work has commenced on the laying down of four acres of new pasture land at Réduit for use by the cattle at the Stock Farm. All cattle, including the working bullocks, were passed through the dipping tank once each week and all are in good condition.

Buildings and roads.—All labourers houses have been repaired during the year and the bullocks stables improved. The Agricultural Superintendent's quarters were repainted, repaired and a new installation of electric light put in. A shed has been erected to hold the Austin Tractor and the ploughs and cultivators belonging to the Department. All roads have been kept in good repair and systematically cleaned.

Tobacco Factory.—The work of the Tobacco Factory was placed under the control of the Division during the year.

Summary of work done during the year :—

Dried tobacco leaves received by the Factory	-	-	11,000.5	Kilos
Carottes made	-	-	1,593	
Number of recarottings made during the year	-	-	7,112	
Number of carottes worked	-	-	1,714	
Raw tobacco obtained	-	-	7,038.5	Kilos
Sifted dry tobacco obtained	-	-	2,311.3	"
Dust and Butts	-	-	3,136.5	"
Sifted tobacco % raw tobacco (average)	-	-	36.72	"
Tobacco delivered for sale	-	-	1,414.5	"

New machinery has been installed which works satisfactorily.

Royal Botanical Gardens, Pamplemousses

Economic Section.—Cane experiments on customary lines were continued, 55,580 tons of canes were sent to Beau Plan Factory.

Experiments were carried out with Tobacco, Sweet Potatoes, Manioc, Pistache, Eddoes and Onions.

4,000 tops of selected cane varieties were supplied to Estates and 42 complete canes. The condition of the Experiment Station was maintained satisfactorily throughout the year.

Ornamental Section.—The Ornamental section was maintained in good order throughout the year and improvements were effected where necessary. Bridges were repaired and renovated, railings painted, kiosks rethatched. At the main building at Mon Plaisir the back verandah was repaired.

The Nursery sheds were repaired and two new stone shelves built.

Seeds and plants were supplied to 63 different parties during the year.

The rainfall for the year was 59.75 inches.

It is estimated that 11,562 visitors visited the gardens during the year and 478 picnics were held in the grounds.

Curepipe Gardens

Economic Section.—The section was maintained in good order; the tea plantation was pruned in July.

Ornamental Section.—Usual routine work was carried out and attention given when required. Paths and roads were kept in proper order.

Educational Section.—The section was maintained in satisfactory condition. Botany classes from the Royal College received regular instruction in this section. The model school garden was kept in good order throughout the year.

Nurseries.—Nursery work was maintained and ornamental plants sold to public and supplied to Government Institutions. The maintenance of the Plantations at Floréal remained under the charge of the Overseer throughout the year.

Abercrombie Nursery

The work at Abercrombie Nursery was under the charge of the Overseer Royal Botanical Gardens during the year. The number of plants distributed amounted to 7,842.

The list of plants sold is as follows :

Letchi layers...	63	Lime	404
Mango grafts	103	„ layers	29
do. seedlings	40	Citron	151
Budded Oranges	96	Bigarade	35
Seedling Oranges	10	Combava	63
Budded Mandarine	1	Bergamotte	24
Seedling Mandarine	32	Pamplemousses	12
Coconuts	699	Cloves	50
Bread fruit	4	Pacris	9
Avocadoes	42	Caripoullay	17
Attier	160	Cola	10
Peach	62	Coffee L	10
Cherry	13	Onions T	5,200
Star Apple	6	Areca C	4
Sugar Apple	20	Crysal Lutescens	2
Bibassier	31	„ Clumps	3
Fruit de Cythère	19	Martinezia C	12
Corossol	9	Hyophorbe Amaricaulis	24
Guavas	92	Cayenne	12
Mabolo	8	Cannas	12
Grenadier	19	Bougainvilleas	56
Jambosse	36	Cassia Javanica	2
Jamalac	32	Aloe variegata	2
Jak	80	Caryota sp.	2
Eugenia Currari	1	Aristolochia	18
Lecythis Minor	1	Flamboyant	2
Lucuma Salicifolia	1		

Government House Grounds

The grounds were maintained in good order. Proper care was given to the forest plantations; the trees planted two years ago in regular rows are making good growth.

Pleasure Grounds.—Every effort was made to maintain the appearance of this section, the show of Holly hocks obtained was noteworthy.

A new pond was dug, two tennis courts remade and the collection of ornamentals improved.

Kitchen Garden and orchards.—Vegetables were regularly supplied from this garden and the condition of the area maintained.

Médine Irrigation Experiment Station

The second year's working of this Experiment Station was carried out during the year and all fields were reaped experimentally. So soon as sufficient results have been accumulated to warrant definite deductions being drawn, the results will be published in the form of a report. In the meantime certain points begin to emerge which have a definite importance. For example it has been shown that watering at short intervals gives rise to higher yields than watering at longer intervals; that after cultivation for the conservation of water, tends to produce higher returns and that certain varieties stand out as being particularly suitable for growth under irrigated conditions. Further the date of planting appears to have a very considerable influence: plantation in June and July giving much more satisfactory results than in other months.

The maximum return obtained from fields exceeded 50 tons of cane per acre, while the average return of cane for the whole experiment station worked out at 25.8 tons per acre. In addition to the experiments with canes recorded, regular meteorological observations are taken while an extensive series of measurements of cane growth on the different plots have been carried out.

A point of some significance that has emerged is the extraordinary variability of certain soils in their capacity for absorbing water and this is bound fundamentally to affect the question of what lands are capable of remunerative exploitation under irrigation. This factor profoundly affects the question of the depth of watering since an amount of water which is more than sufficient for the requirements of some lands is inadequate in the case of others.

The principal lines of investigation in progress are as follows:

1. Variation of depth of watering,
2. Variation of frequency of watering,
3. Manurial treatment of irrigated canes,
4. Cultivation of irrigated canes,
5. Time of watering of irrigated canes,
6. Trials with cane varieties.

The equipment of the station comprises:

1. A storage reservoir of 22,500 feet capacity,
2. 545 feet of main canal in concrete,
3. 1,550 feet of secondary canal in concrete,
4. 15,200 feet of lateral distributory canal.

During the year it was found that special attention had to be paid to the lining of lateral canals owing to seepage losses.

It is to be borne in mind that the principal object of these experiments is to ascertain what quantity of water has to be applied directly to the fields, consequently methods of laying out the land have been adopted which could not be followed in estate practice. On the other hand once these different contributing factors have been established it will be possible to allow for them by making computations of the water losses in channels etc. and so to arrive at an idea of the position as it exists in practice.

In May last His Excellency the Governor and the Members of the Board of Agriculture attended the Experiment Station where the Director of Agriculture explained and demonstrated the experiments in progress. The Students of the School of Agriculture visited the Station in April when the work was explained.

Experimental Dairy

The work at the Experimental Dairy was continued during the year on lines previously laid down; the results obtained serve to indicate that dairying can be successfully carried out on the lands surrounding Curepipe. During the year, 22 cows yielded milk; the total yield given by each cow is shown in the annexed table.

MODEL DAIRY CUREPIPE.—RETURN OF MILK YIELD DURING THE YEAR 1923

Months	Hyacinth 1523	Violet 1514	Aster 1525	Narcissus 1531	Pansy 1533	Foxglove 1512	Geranium 1517	Rose 1511	Tulip 1516	Daisy 1209	Marigold 1530	Larkspur 1521	Mayflower 1522	Thistle 1530	Dahlia 1506	Primrose 1504	Shamrock 1505	Camelia 1517	Carnation 1513	Cornflower 1521	Poppy 1515	Total for each month
January	253½	137½	115	187½	104	106	213½	118½	127	341½	136½	116½	200½	...	...	217½	285	...	...	...	...	2,660
February	188½	112½	65	147	84½	72½	167½	94½	101½	239	108½	90½	138	...	...	169½	219½	...	...	...	...	1,987½
March	222	113	90½	164½	47½	8½	176½	106½	108	250½	127½	102½	...	...	...	181	235½	...	...	...	209½	2,143½
April	200	107	64½	95	...	...	172½	110½	89	213	123½	88	...	...	...	172½	214½	...	...	...	265½	1,916½
May	184½	112½	...	...	...	...	175½	111½	64½	190	113	43½	...	157½	180½	179	199½	...	206½	...	262½	2,189
June	174	88	...	99	...	95½	111	99½	...	189½	10½	...	101	380	320½	168	186½	...	32½	...	234	2,580½
July	156½	13½	268½	324	...	380½	...	13½	...	167½	...	...	442½	372	314½	156½	198	...	321½	...	217½	3,345
August	123	...	296	277½	300	327	...	...	...	160½	...	282½	402	320	283	131	176	...	278	...	186	3,542½
September	4	...	228	221½	346½	260½	78½	...	...	138½	...	402	302	255	220½	24½	152	...	218½	...	168½	3,021½
October	...	261½	197½	196	325½	254	340	...	...	142½	...	387½	214	243½	202½	...	149½	...	201	...	122½	3,237
November	...	225½	181	182½	275½	233½	296½	...	...	124½	...	339½	...	218	189½	63	136½	...	179	...	...	2,644
December	283	199	172½	171	246½	212½	270	354½	...	94½	166½	255½	...	161½	189½	356	34	...	170½	209½	...	3,545½
Total	1,788½	1,369½	1,678	2,066½	1,730½	1,949½	2,001½	1,008½	489½	2,260½	619	2,107½	1,790	2,107½	1,900½	1,819	2,186½	...	1,899½	209½	1,669½	32,812½

The buildings in which the cows have been housed up to the present are of a very rough character, but attempts have been made with some success by careful attention to cleanliness to produce the milk under sanitary conditions; the bacterial count of the milk was made by the Bacteriological Laboratory twice during the year and showed counts of 14,033 and 19,900 per cc. This is very good considering the conditions under which the milk is produced and there is every reason to believe that the figure will be considerably improved under better working conditions.

The rations of all cows have been adjusted on a proper basis, a basal ration having been laid down for maintenance and a productive ration given to each animal which varies according to the amount of milk she is yielding; this is in accordance with the most recent practice, and great economies are effected in food; the basis of grain feeding is dholl and either maize or hominy chop.

At Curepipe the question of the provision of green fodder is sometimes difficult and trials have been made with various grasses for planting, both for cutting as forage and for grazing. An area of Crown Land at Plaine Lauzun has also been ear-marked for provision of dried litter for the dairy.

As the result of the experiments carried out it was decided during the year to instal the Dairy in more permanent quarters and work was commenced on the erection of a dairy stable to accommodate 52 cows. The design of the building follows modern up to date lines and is based on information collected by the Director of Agriculture during his leave in England in 1922. The general arrangements of the dairy building will be such as to secure thorough cleanliness, metal stanchions being substituted for ropes and chains as ties for the cattle and steel stalls taking the place of wooden ones. The building is intended to serve as demonstration of modern dairy building construction. Additional areas of land have been cleared as pasture for planting forage, and additional cows have been ordered from South Africa. It is hoped that the new building will be in full working order by the middle of the year.

The milk from the dairy has been supplied as before to the Civil and Caudos hospitals. When the dairy reaches the strength contemplated it is hoped that it may be possible to supply small quantities of milk to private consumers as well as to Government Institutions.

Two cows died during the year and 17 calves were born of which 5 were bulls and 12 heifers.

Rainfall.

The Rainfall of the various Experiment Stations was as follows.

Réduit Central Experiment Station and Government House				
grounds ...	...	...	...	49.01 inches
Royal Botanical Gardens, Pamplémoussés	...	...	...	59.75 "
Curepipe Gardens	...	...	...	123.67 "
Abercombie Nursery	...	...	...	49.01 "
Médine Experiment Plot	...	...	...	28.58 "
Mahebourg Demonstration Plot	...	...	...	39.08 "

SCHOOL OF AGRICULTURE

The work of the School of Agriculture attached to the Department was merged in that of the new College of Agriculture in September. Prior to that date the work of the students was so modified as to permit of this fusion taking place without upsetting the curriculum of the students in training. The work of the College of Agriculture is reviewed in a separate report.

RODRIGUES

The following report on the work of the Branch of the Department of Agriculture in Rodrigues has been abstracted from the report of the Agricultural Superintendent.

Weather conditions.—Weather conditions during 1923 were extremely unfavourable. The total rainfall for the year as recorded at the Experiment Station amounted to 29.90 inches as against the yearly normal of 44.55. The conditions were aggravated by very high temperatures in November-December and during these two months even drinking water was very scarce.

During May and June caterpillar attacks did a great deal of damage to crops. Exports for the year showed a very considerable falling off, the exports of cattle being particularly low and amounting only to 53. A census of all animals of the Cattle Walk and of all leases of Crown Lands was carried out during the year, the results being as follows:

Animals	No. of animals on Cattle Walk		No. of animals on private lands		Total
Cattle	...	3127	...	600	3727
Sheep	...	1692	...	100	1792
Goats	...	3956	...	300	4256

In relation to area cultivated 2,275 acres of Crown Land are leased for Agricultural purposes, 586 are leased for residential and Agricultural purposes. Of this total area it is estimated that 1857 acres are actually cultivated, while it is further estimated that 700 acres of privately owned land were also cultivated, making a total area under cultivation of 2,557 acres.

Work of the Experimental Station.—During the past year, the experimental plots have been extended while quarters for the Superintendent, stores, office and tobacco drying shed have been built. The plots have been fenced and roads completed.

There are seven half acre plots for experimental work, 1 acre plot of orchard and 1 plot of half acre utilised for nursery work. The area between the plots and the river is now being cleared and the approach of the Station is being similarly treated. When completed the whole of the valley bottom will have been dealt with, the approach to the station being between demonstration plantations of coconuts and citrus fruit and through the paddocks. It is intended to plant up the paddocks in Kikuyu grass (*Penisetum longistylum*).

Plot experiments.—Plot experiments were carried out with forage crops, maize, sweet potatoes, tobacco, onions, manioc, pistache eddoes and tannias, yams, fodder grasses.

The trials with tobacco were carried out on a rather extensive scale and comprised experiments with "Tobacco Bleu." Two separate plantations were made, one in March 1923 and one in June 1923, the plantations both being half acre in extent. The results from the April plantation were much better than those from the June plantation, the former yielded at the rate of 1500 lbs of dried leaves per acre and the latter at the rate of 948 pounds of dried leaves per acre. The results show that Rodrigues is very well adapted to the production of tobacco of this type, both the yield and the quality of the tobacco being excellent.

Experiments with food crops show that in relation to sweet potatoes certain varieties are well suited to Rodrigues conditions. The experiments with onions showed decidedly encouraging results and during the year 1924 an effort will be made to investigate the possibilities of developing a small export trade to Mauritius.

Experiments with cotton have not so far yielded much in the way of results but this is probably due to unfavourable weather conditions and unsuitable strains.

It is believed that the cultivation of cotton possesses possibilities.

The following seeds of economical and decorative plants were introduced during the year.

The oil palm (*Elaeis guinensis*), Betel nut (*Areca catechu*) which did not germinate, *Cocos Romanzoffiana*, *Cocos flexuosa*, *Hyophorbe amaricaulis*, *Chrysalidocarpus lutescens*, *Latania mauritanica*, *Oreodoxa* sp., *Dictyosperma album*, *Corypha elata*, *Licuala spinosa* (*horrida*), *Caryota urens*, *Verschaffeltii splendida*, *Hyophorbe Verschaffeltii*, Coffee (*Coffea liberica*) and *C. excelsa*, Nutmeg (*Myristica noschata*) which failed, *Nephelium longanum* which failed, Custard Apple (*Anona squamosa*), Mangoes (*Magnifera indica*) varieties Baissac, Auguste, Aristide, Maison Rouge; Avocado Pear (*Persea gratissima*) and Litchi (*Nephelium litchii*) layers.

Stock farm.—Satisfactory progress has been made with the Stock Farm and the following shows the number of animals at the Farm on December 31st.

Catalonian donkeys	...	{ 1 jack, 11 jennies—original herd,
		{ 6 " 6 " —born in Rodrigues.
Nigerian Sheep	...	2 rams, 26 ewes including lambs.
Cattle	...	{ 1 Normandy Bull,
		{ 1 Sindhi Bull,
		{ 1 Sindhi Cow,
Middle White pigs	...	3 boars, 1 sow, 6 young pigs.
Poultry	...	{ 15 White Plymouth Rock Cocks (12 on loan),
		{ 12 hens,
		{ 25 chickens cross bred with W. P. R.

Catalonian Donkeys.—During the year the donkeys have thrived well and their present condition is good. Seven of the jennies had foals during the year.

One young jack was shipped to Mauritius in June and was sold for Rs. 1,000.

The introduction of this herd is proving most successful and there appears to be a future for donkey raising.

Co-operative Credit Societies.

Work on these Societies has been held up owing to the Co-operative Credit Societies Ordinance of 1913 not being applicable to Rodrigues. As soon as the Ordinance is made applicable a Society will be formed at Trèfles and everything is in readiness for it to commence operations.

The formation of this Society should be the forerunner of many others.

Visits to Outlying districts.

The Superintendent paid a large number of visits to the different districts of the Island, but these have been somewhat curtailed owing to the difficulties of transport.

School Gardens.

The school garden at St. Gabriel was inspected on two or three occasions during the year.

The Reverend Father Laffont has opened a school garden at La Ferme and Forest Ranger Paul Lecordier has been given permission to act as instructor.

School gardens should play a great part in the betterment of agricultural practice on the Island.

Reafforestation.

The work in connection with forestry operations was taken over by the Agricultural Branch in February and has entirely been reorganised.

There has been a reduction in the number of Rangers which has necessitated the Ranger in charge of reafforestation taking over a small block.

Owing to the excessively dry season there has been little progress in reafforestation and existing plantations have suffered somewhat severely and a large number of young trees have died.

The filao nurseries of St. François and Port Sud Est were closed during the year and Nursery work confined to Mount Lubin and La Ferme.

The following table shows the number of plants planted in new plantations.

Plantation.		<i>New plantations.</i>		Number.
		Trees planted.		
Cascade Manique	...	Terminalia Arjuna	...	1,099
"	"	Bois d'Olive (<i>Elæodendron orientale</i>)	..	1,271
"	"	Lilac (<i>Melia Azederach</i>)	...	32
"	"	Eucalyptus tereticornis	...	1,100
"	"	Guango (<i>Pithecolobium Saman</i>)	...	170
Road Side, Shade trees...		Terminalia arjuna	...	437
"	"	Eucalyptus tereticornis	...	4,425
Total planted				8,534

All plantations have been recruited where necessary and as far as weather conditions would permit and the following table shows the number of plants recruited :

Plantation.		<i>Recruiting.</i>		Number.
		Trees planted.		
St. François	...	Filao (<i>Casuarina equisetifolia</i>)	...	20,200
Port Sud Est	...	"	"	6,900
Anse Mourouque	...	"	"	1,600
Anse Quitor	...	"	"	4,500
Anse Raffin	...	"	"	1,100
Baie l'Enfer	...	"	"	1,600
Pte. Corail	...	"	"	1,500
Plaine Piment	...	<i>Pandanus heterocarpus</i>	...	105
Cascade Manique	...	Lilac (<i>Melia Azederach</i>)	...	400
Roadside trees	...	Eucalyptus tereticornis	...	700
Total recruited				38,605

The planting programme for the coming season is as follows :

1. Areas of fast growing shade trees to be planted on the Cattle Walk and the following trees will be utilised for this purpose : *Terminalia Cattapa* and *T. arjuna* and Lilac (*Melia Azederach*).

2. Springs and sources of streams to be guarded by shade trees, the following to be utilised for this purpose : *Jamrosa* (*Eugenia jambosa*), and *Terminalia* sp. near the springs with an outer fringe of Bois Noir (*Albizia lebbek*) as there are not sufficient plants of *Eugenia* and *Terminalia* for the purpose.

3. Timber reserves to be put down and the following trees to be utilized : Bois Noir (*Albizia lebbek*), Bois d'Olive (*Eleaodendron orientale*), Tamarind (*Tamarindus indica*), Mahogany (*Sweetania mahogani*).

The windbreak at Plaine Piment will have to be replanted this year as the past dry season has been responsible for the death of nearly all the plants. This will be planted in its original form and with mixed trees. The use however of such trees as Bois Noir (*Albizia lebbek*) and Bois d'Olive (*Eleaodendron orientale*) on the Cattle Walk is not to be recommended as their growth is too slow with a resulting greater cost in upkeep, and also they are not ideal for windbreaks.

General Remarks

The Honourable Director of Agriculture inspected the Station in December and during the year the following persons from Mauritius visited the Experimental Station : The Right Revd. Bishop of Mauritius, Mr. F. E. Lionnet, Government Veterinary Surgeon who inspected the animals at the Stock Farm, Mr. L. Jackson, Mr. V. Smart, and Mr. L. Leclézio.

An Agricultural Show was held in September and, though it was the first show ever held in the island, was a considerable success. It is hoped that it will be the forerunner of many successful shows. There were 248 exhibits of a fairly good quality.

A prize holding scheme was also initiated but was not so successful as the show, future years will probably see far more entries.

During the year the following reports have been rendered :

1. Annual report for 1922.
2. Monthly reports on progress.
3. Special report as to progress made up to June 30th.
4. Report on coconut plantations.
5. Report on prize holding scheme and Agricultural Show.

In addition to the above a large number of Minute papers have been dealt with on questions affecting agriculture while two hundred and seven applications for renting of land have been reported on.

The following regulations affecting agriculture have been issued during the year :
 “The Rodrigues Protection of Produce Regulations, 1923.”

Samples of water from all the wells on the island and from a large number of rivers and springs have been forwarded to Mauritius during the year for analysis.

Expenditure and Receipts

The expenditure during the year ending December 31st 1923 for the Experimental Station has been Rs. 27,507.46, while the receipts have been Rs. 1,316.55.

BOARD OF AGRICULTURE

The Board of Agriculture, established under Ordinance No. 30 of 1912, consists of :
 His Excellency the Governor, President.
 The Director of Agriculture, Vice-President.

The following members were appointed for 1923 :—

Honourable J. A. Duclos, C.M.G.	Messrs. G. Regnard
„ M. Noël, C.B.E.	E. Rouillard
„ M. Martin	J. de Spéville
„ G. Antelme	H. G. Ducray
„ M. d'Unienville	L. H. de Froberville
Messrs. A. Hugnin	M. Lagesse
J. J. Gibson	F. N. Langlois
G. Clarenc	Pundit Boleram Mookteram
F. A. Nichols	

In 1923, one meeting of the Board was held on June 6th.

The following papers were laid before the Board :—
 Bulletin No. 27—“General Series.”
 Prospectus and Syllabus of the College of Agriculture.
 Preliminary forecast of the 1923-24 Sugar Crop.

The following questions were discussed by the Board :—

1. Modification in mode of meeting of Board.
2. Introduction of wild animals and game.
3. Carts in Mauritius.
4. Agricultural Shows.
5. The Surra campaign.
6. Dipping campaign.
7. Collaboration of the Department of Agriculture in the Revue Agricole.
8. Tractors.

PUBLICATIONS

The following publications were issued during the year :—

Bulletins :

General Series—

- No. 27—“Critical periods in the growth of the Sugar Crop” by M. Koenig, Statistician.
- No. 28—“The Application of Molasses as a Fertilizer to Cane Soils in Mauritius” by H. A. Tempany, D.Sc., F.I.C., F.C.S., Director of Agriculture, and France Giraud, Assistant Chemist.
- No. 30—“Experiments with Varieties of Sugar Cane 1920-22 together with a summary of the results from 1917-22.”
 Prospectus and Syllabus of the College of Agriculture.

Scientific Series.—No. 9 “Some studies in connection with the development of the Sugar Cane” by H. A. Tempany D.Sc., F.I.C., F.C.S., Director of Agriculture.

The following reports and memoranda were prepared and submitted to the Council of Government and to the Board of Agriculture :—

- Report on Co-Operative Credit Societies 1922-23
- Report on operations against *Phytalus Smithi* 1922-23
- Preliminary forecast of the 1923-24 Sugar Crop
- Final forecast of the 1923-24 Sugar Crop.

An important development took place during the year whereby the Director of Agriculture became partly responsible for the production of the recently established Agricultural Journal “La Revue Agricole.” With the consent of the Government and by arrangement with the Editorial Committee, members of the Department staff became responsible for the production of certain sections of the publication. The arrangement came into force in July and since that date Departmental articles regularly appear in the paper. This move has given facilities which have long been wanted and provides a means for publication and for approaching the Agricultural community which did not previously exist ; the review is issued once every two months and is published in French only.

LEGISLATION

The following Ordinances, Proclamations and Notifications relative to Agriculture were issued during the year :—

Ordinance No. 27 of 1923 re : To regulate the practice of Veterinary Surgery in Mauritius,
Proclamation No. 30 of 17.11.23 re : To restrict the importation of Mammals, Birds.

Reptiles and Fishes.

Government Notification No. 77 of 23.3.23 re : Regulations amending those published under Government Notification No. 258 of 18.12.15.

Government Notification No. 84 of 31.3.23 re : To protect certain birds in Rodrigues.

Government Notification No. 85 of 31.3.23 re : Regulations to provide for the protection of the produce of Rodrigues.

Government Notification No. 94 of 5.4.23 re : Regulations for the control of Animal Diseases.

Government Notification No. 189 of 30.6.23 Rules re : Visits of Government Veterinary Surgeon to Sugar Estates.

Government Notification No. 202 of 21.7.23 Regulations re : Registration of Agricultural Chemists.

Government Notification No. 307 of 24.11.23 re : To amend the Slaughtering of Cattle Restriction Ordinance of 1918.

EXPENDITURE AND RECEIPTS

The expenditure of the Department has been as follows :—

	Rs.	c.
Personal Emoluments - - - - -	82,651.12	
Maintenance of Gardens - - - - -	16,253.40	
General Services - - - - -	2,747.14	
Prevention of Plant Pests and Diseases - - - - -	2,485.69	
Prevention of Animal Diseases - - - - -	5,134.99	
Upkeep of stock - - - - -	10,582.93	
Establishment of Demonstration Plots - - - - -	1,712.26	
Subvention to Société Horticole - - - - -	1,000.00	
Travelling expenses - - - - -	9,987.58	
Miscellaneous expenses Co-Operative Credit Societies - - - - -	55.00	
Maintenance of Food Plantations - - - - -	2,338.70	
Maintenance of Experiment Stations - - - - -	13,857.24	
Minor Industries - - - - -	23,757.30	
Apparatus and Chemicals - - - - -	6,152.08	
Nursery for Economic Plants - - - - -	1,378.80	
Registration of Chemists examination - - - - -	27.50	
Destruction of Phytalus Smithi - - - - -	52,755.96	
Experimental Station for Irrigation of canes - - - - -	11,339.00	
Upkeep of Plantation at Floreal - - - - -	491.40	
Dairy { Capital expenditure - - - - -	2,730.96	
{ Upkeep expenses - - - - -	14,003.23	
Agricultural Shows - - - - -	186.94	
Purchase of Raw Tobacco - - - - -	12,309.45	
Special—Erection of Dipping Tanks - - - - -	8,329.60	
Total - - - - -	282,268.27	

The Receipts were :

	Rs.	c.
Sale of Flowers and Plants - - - - -	3,455.93	
Sale of Stock - - - - -	3,443.52	
Services of Animals - - - - -	230.00	
Sale of eggs and poultry - - - - -	220.25	
Sale of Milk, Cattle Station - - - - -	1,079.08	
Sale of Canes - - - - -	8,928.20	
Analytical fees - - - - -	520.00	
Miscellaneous - - - - -	446.06	
Rent of Tea Plantation - - - - -	550.00	
Sale of Tobacco - - - - -	10,753.57	
Sale of Maize - - - - -	1,329.57	
Contribution C.C.S. - - - - -	3,194.88	
Veterinary Fees (Customs) - - - - -	1,554.00	
Destruction of Phytalus Smithi (Customs) - - - - -	44,586.57	
Loans repaid by Co-Operative Credit Societies - - - - -	4,735.00	
Interest on Loans - - - - -	698.56	
Rent of Crown Lands at La Ferme and St. Martin - - - - -	382.00	
Sale of Produce Experimental Dairy - - - - -	8,678.65	
Total - - - - -	94,785.84	

April 29th, 1924.

H. TEMPANY,
Director of Agriculture.

